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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/582,593

Filing Date: March 19, 2007

Appellant(s): JONES ET AL.

James A. Jubinsky
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/21/2009 appealing from the Office action
mailed 3/27/2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The Appellant's statement of the grounds of rejection to be reviewed on appeal is incorrect because Appellant's brief presents arguments relating to construction election under MPEP 821.03 and 37 CFR 1.142, and this issue relates to petitionable subject matter under 37 CFR 1.181 and not to appealable subject matter. See MPEP § 1002 and § 1201.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,975,406	Frestad et al	12-1990
4,921,824	Chin et al	5-1990
EP 0554968	Kim	10-1993

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4975406 to Frestad et al (hereinafter referred to as Frestad).

Regarding claims 1 and 3, Frestad discloses an oxidic catalyst comprising at least 50% by weight of Al_2O_3 (a trivalent metal, overlaps claimed range of 5-60 wt%), 1-10% of alkaline earth metal oxides (a divalent metal, overlaps claimed range of 5-60 wt%) and 1-50% of rare earth metal oxides (overlaps claimed range of 40-55%) (Frestad, column 3, lines 56-68). In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists (see MPEP 2144.05 [R-5]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected values for Al_2O_3 , rare earth metal oxide, and alkaline earth metal oxides that lie within the instantly claimed ranges because Frestad discloses the same utility throughout the disclosed ranges.

Regarding claim 2, there are only six alkaline earth metal oxides to choose from. It would be obvious to one of ordinary skill in the art to select magnesium as the alkaline earth metal oxide given the extremely limited number of choices available.

Claims 1-3 and 6 rejected under 35 U.S.C. 103(a) as being unpatentable over US 4921824 to Chin et al (cited by applicant in IDS; hereinafter referred to as Chin).

Regarding claim 1-3, Chin discloses an oxidic catalyst comprising at least 25% rare earth oxides (overlapping the claimed range of 40-55%) (Chin, column 3, lines 45-54) and the remainder of the catalyst (i.e. 0-75% of the catalyst, overlapping the claimed ranges of 5-60%) can comprise alumina and magnesia (Chin, column 4, lines 3-16). In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists (see MPEP 2144.05 [R-5]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected values for alumina, rare earth metal oxide, and magnesia that lie within the instantly claimed ranges because Chin discloses the same utility throughout the disclosed ranges.

Regarding claim 6, Chin discloses that the catalyst particle can include a matrix as well as clay, aluminates, and silicates (Chin, column 4, lines 3-16), which are molecular sieves.

Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4921824 to Chin et al (cited by applicant in IDS; hereinafter referred to as Chin) in view of EP 0554968 A1 to Kim (cited by applicant in IDS).

Chin discloses an oxidic catalyst composition as described above, and also that the catalyst particle can be prepared by processes known in the art (Chin, column 4, lines 42-43). Chin does not explicitly disclose a process for preparing the catalyst which

involves forming a precipitate from a solution containing dissolved divalent, trivalent, and rare earth metal salts, followed by calcination of the precipitate obtained.

Kim discloses a process for forming a MgO - La_2O_3 - Al_2O_3 catalyst wherein the process involves forming a precipitate from a solution containing dissolved divalent, trivalent, and rare earth metal salts, followed by calcination of the precipitate obtained (Kim, figure II).

It would be obvious to one of ordinary skill in the art at the time the invention was made to use the process of Kim to prepare the catalyst composition of Chin. The motivation for doing so is that Chin teaches that the catalyst particle can be prepared by processes known in the art (Chin, column 4, lines 42-43), and Kim is a process known in the art that would be able to produce the catalyst of Chin.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0554968 A1 to Kim (cited by applicant in IDS) in view of US 4921824 to Chin et al (cited by applicant in IDS; hereinafter referred to as Chin).

Kim discloses an oxidic catalyst composition comprising 30 to 50 MgO (lying within the claimed range of 5 to 60)/5 to 30 La_2O_3 /30 to 50 Al_2O_3 (lying within the claimed range of 5 to 60) which is particularly effective for passivating vanadium during the catalytic cracking of hydrocarbons (Kim, page 2, lines 32-34). Kim does not explicitly disclose that the catalyst should comprise 40-55 wt% of a rare earth metal.

Chin discloses an oxidic catalyst composition used in the catalytic cracking of hydrocarbons which comprises at least 25% and more preferably at least 50% lanthanum oxide in order to passivate metal contaminants, (Chin, column 3, lines 34-54) which may

also contain magnesia and alumina (Chin, column 4, lines 3-16), and that the more lanthanum in the catalyst, the better catalyst performance will be (Chin, column 3, lines 34-54).

Regarding claims 1-3, it would be obvious to one of ordinary skill in the art at the time the invention was made to modify the composition taught by Kim such that the lanthanum oxide content of the composition is greater than 25%, preferably greater than 50% as taught by Chin (which overlaps the instantly claimed range of 40-55%). The motivation for doing so would be to improve the effect the composition of Kim has on passivating vanadium. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists (see MPEP 2144.05 [R-5]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected values for aluminum oxide, lanthanum oxide, and magnesium oxide that lie within the instantly claimed ranges because Kim in view of Chin discloses the same utility throughout the disclosed ranges.

Regarding claim 4, Kim discloses a process for forming a $MgO\text{-}La_2O_3\text{-}Al_2O_3$ catalyst wherein the process involves forming a precipitate from a solution containing dissolved divalent, trivalent, and rare earth metal salts, followed by calcination of the precipitate obtained (Kim, figure II).

Regarding claim 5, a precipitate containing magnesium, lanthanum, and alumina is a physical mixture of a divalent, a trivalent, and a rare earth metal source, so Kim anticipates claim 5 as well.

Regarding claim 6, Kim discloses that the oxidic catalyst composition can be incorporated in FCC catalyst particles which contain zeolite (i.e. molecular sieve) and a matrix.

(10) Response to Argument

Response to arguments regarding constructive election

Appellant's arguments regarding constructive election under MPEP 821.03 and 37 CFR 1.142 will not be addressed because this issue relates to petitionable subject matter under 37 CFR 1.181 and not to appealable subject matter. See MPEP § 1002 and § 1201.

A. Response to arguments regarding Frestad

Appellant argues that the cited weight percent of rare earth metal, divalent metal, and trivalent metal contained in a catalytic coating layer cited in Frestad in column 3, lines 56-68, does not render obvious instant claim 1 because the weight percentage of each element based on the sum of the weight of the coating layers and monolithic carrier disclosed in Frestad supposedly does not overlap the instantly claimed ranges. This is not found persuasive for the following reasons.

Both Examiner and Appellant acknowledges that the cited catalyst composition of Frestad refers to a “**distinct**” catalytic layer coated on a monolithic substrate (see first paragraph of page 9 of Appellant's appeal brief). Furthermore, Appellant has not contested the fact that the cited composition of the distinct catalyst coating layer overlaps that of the instant claim, nor has Appellant argued that the instantly claimed composition has unexpected results over the composition of Frestad. Examiner submits

that the **distinct** catalytic coating layer cited in Frestad is itself an oxidic catalytic composition. The composition of said distinct catalytic coating layer does not change merely because it is coated on a monolithic substrate, nor does the composition of the catalytic coating layer need to be calculated based on the sum of the weight of the coating layer and the monolithic carrier. This is supported by the fact that Frestad always references the composition of the **distinct** catalytic coating based on the weight of the distinct catalytic coating, and not based on the sum of the weight of the coating layer and the monolithic carrier. Appellant's argument is analogous to arguing that the weight percentage of the elements of a paint composition applied to a house must be calculated based on the combined weight of the layer of paint and the house itself.

Since Appellant does not refute that the composition of the catalytic coating layer cited in Frestad overlaps that of the instantly claimed range, Examiner respectfully submits that a *prima facie* case of obviousness has been established. Since Appellant has not refuted the *prima facie* case of obviousness by showing the criticality of the instantly claimed ranges, Examiner respectfully submits that the obviousness rejection of claims 1-3 be maintained.

Appellant further argues that claim 2 is not obvious in light of Frestad because claim 2 includes all of the limitations of claim 1 and claim 1 is not obvious in light of Frestad. This is not found persuasive because claim 1 is obvious in light of Frestad for the reasons Examiner has respectfully submitted above.

B. Response to arguments regarding Chin

Appellant argues that the instant claims are not obvious over Chin because Chin states that "the amount of lanthanum and, optionally, other rare earth oxides in the discrete particles is not critical," whereas applicant argues that the Examples of the instant specification and paragraph [0056] make clear that the amount of rare earth metal oxide has an impact on the performance of the present invention. Appellant also directs Examiners attention to MPEP 2144.05 III. Although Appellant do not explicitly state that the instantly disclosed example show the criticality of the instantly claimed range, Examiner believes this is what Appellant is attempting to argue and as such this argument will be addressed as well. These arguments are not found persuasive for the following reasons.

First, although Chin states that "the amount of lanthanum and, optionally, other rare earth oxides in the discrete particles is not critical," in the very next sentence Chin states "The amount of lanthanum and optionally, of other rare earth oxides in the discrete particles... is preferably at least about 50%... In general, the greater the amount of lanthanum in the discrete particle, the better the improvement in catalyst performance will be." Thus, contrary to Appellant's assertion, Chin explicitly states that the amount of lanthanum (i.e. rare earth metal oxide) has an impact on the performance of the present invention, and provides a range for lanthanum that overlaps the instantly claimed range. Furthermore, rebutting a *prima facie* case of obviousness does not involve determining whether the prior art recognizes the disclosed range in the prior art

as critical. Instead a *prima facie* case of obviousness is rebutted by demonstrating the criticality of the instantly claimed range over the prior art.

With regards to Appellant's possible assertion that the instantly disclosed examples demonstrate the criticality of the instantly claimed range, Examiner directs Appellant's attention to MPEP 2144.05 III, which states "See MPEP § 716.02 - § 716.02(g) for a discussion of criticality and unexpected results." MPEP 716.02(d) states "Whether the unexpected results are the result of unexpectedly improved results or a property not taught by the prior art, the "objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support." In other words, the showing of unexpected results must be reviewed to see if the results occur over the entire claimed range. *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980)" MPEP 716.02(d) II states "To establish unexpected results over a claimed range, applicants should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range. *In re Hill*, 284 F.2d 955, 128 USPQ 197 (CCPA 1960)." The instantly disclosed examples fail to meet either of these conditions because there is only a single instantly disclosed example (Example 2) which falls within the scope of the instant claims, the rest are comparative examples, thus not meeting the requirement of having multiple disclosed tests being commensurate in scope with the instantly claimed range. Furthermore, the disclosed examples show that there is no difference in MiPV retention in a catalyst having 65 wt% La₂O₃ and 50 wt% La₂O₃ and very little difference in MiPV retention in a catalyst having 30 wt% La₂O₃ and a catalyst having 50 wt% La₂O₃. This appears to be

evidentiary of the instantly claimed range **not** being critical. Furthermore the results of the instantly disclosed examples are not unexpected in view of Chin because the instantly disclosed examples show that the MiPV retention of the catalyst increases with increasing wt% La₂O₃ and Chin explicitly states "the greater the amount of lanthanum in the discrete particle, the better the improvement in catalyst performance will be," which appears to be the case in the instantly disclosed examples.

Since Appellant does not refute that the composition of the catalytic coating layer cited in Chin overlaps that of the instantly claimed range, Examiner respectfully submits that a *prima facie* case of obviousness has been established. Since Appellant has not refuted the *prima facie* case of obviousness by showing the criticality of the instantly claimed ranges as discussed above, Examiner respectfully submits that the obviousness rejection of claims 1-3 over Chin be maintained.

Appellant further argues that claim 6 is not obvious in light of Chin because claim 6 includes all of the limitations of claim 1 and claim 1 is not obvious in light of Chin. This is not found persuasive because claim 1 is obvious in light of Chin for the reasons Examiner has respectfully submitted above.

C. Response to arguments regarding Chin in view of Kim

Appellant argues that instant claims 4-5 (Examiner would like to note Appellant erroneously references claims 4-5 as claims 5-6 in section C, pages 10-11 of the appeal brief) are not obvious in light of the teachings of Chin in view of Kim because the composition itself is not obvious and therefore the amount of components used to

produce such a catalyst is also not obvious. This is not found persuasive for the following reasons.

Examiner respectfully submits that the composition itself is obvious in view of Chin for the reasons mentioned above in the section "Response to Arguments regarding Chin." Since Appellant has acknowledged that the process of Kim could be used to make the composition of Chin, and Appellant has not argued that the combination of the two references is improper for any reason, Examiner respectfully submits that the obviousness rejection of claims 4-5 over Chin in view of Kim be maintained.

Appellant further argues that instant claim 5 is obvious neither Chin nor Kim describes or teaches the calcination of a physical mixture of a divalent, a trivalent, and a rare earth metal. This is not found persuasive because Kim teaches the calcination of a precipitate of a divalent, a trivalent, and a rare earth metal, and a precipitate is a physical mixture. Since Appellant acknowledges that Kim teaches the calcination of a precipitate of a divalent, a trivalent, and a rare earth metal, and Appellant has not refuted the statement that a precipitate is a physical mixture, Examiner respectfully submits that the obviousness rejection of claim 5 over Chin in view of Kim be maintained.

D. Response to arguments regarding Kim in view of Chin

Appellant argues that instant claims 1-6 are not obvious in light of the teachings of Kim in view of Chin because the composition itself is not obvious in light of the teachings of Chin, and Kim does not provide support to obviate the present invention. Appellant also points to the present Examples, presumably to suggest that the present

Examples show the criticality of the instantly claimed range. This is not found persuasive for the following reasons

Examiner respectfully submits that the composition itself is obvious in view of Chin for the reasons mentioned above in the section "Response to Arguments regarding Chin." Furthermore, Examiner submits that Chin provides clear motivation to increase the La₂O₃ content of the catalyst prepared by Kim to preferably greater than 50 wt% to improve the performance of the catalyst of Kim which would result in a catalyst having an overlapping composition as the instantly claimed composition (see the above rejection of Chin in view of Kim). Since Appellant has not refuted this motivation nor has Appellant argued that the combination of the two references is improper for any reason, Examiner respectfully submits that the obviousness rejection of claims 1-6 over Kim in view of Chin be maintained.

Appellant further argues that claim 6 is not obvious in light of Kim in view of Chin because claim 6 includes all of the limitations of claim 1 and claim 1 is not obvious in light of Chin. This is not found persuasive because claim 1 is obvious in light of Chin for the reasons Examiner has respectfully submitted above.

Appellant argues that instant claims 4-5 are not obvious in light of the teachings of Chin in view of Kim because the composition itself is not obvious and therefore the amount of components used to produce such a catalyst is also not obvious. This is not found persuasive for the following reasons.

Examiner respectfully submits that the composition itself is obvious in view of Chin for the reasons mentioned above in the section "Response to Arguments regarding

Chin." Furthermore, Examiner submits that Chin provides clear motivation to increase the La₂O₃ content of the catalyst prepared by the method of Kim to preferably greater than 50 wt% to improve the performance of the catalyst of Kim which would result in a catalyst having an overlapping composition as the instantly claimed composition (see the above rejection of Chin in view of Kim). Since Appellant has not refuted this motivation nor has Appellant argued that the combination of the two references is improper for any reason, Examiner respectfully submits that the obviousness rejection of claims 4-5 over Kim in view of Chin be maintained.

Appellant further argues that instant claim 5 is obvious neither Chin nor Kim describes or teaches the calcination of a physical mixture of a divalent, a trivalent, and a rare earth metal. This is not found persuasive because Kim teaches the calcination of a precipitate of a divalent, a trivalent, and a rare earth metal, and a precipitate is a physical mixture. Since Appellant acknowledges that Kim teaches the calcination of a precipitate of a divalent, a trivalent, and a rare earth metal, and Appellant has not refuted the statement that a precipitate is a physical mixture, Examiner respectfully submits that the obviousness rejection of claim 5 over Kim in view of Chin be maintained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Brian Walck/

Examiner, Art Unit 1793

Conferees:

/Roy King/

Supervisory Patent Examiner, Art Unit 1793

/Stanley Silverman/

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